Amendments to the Claims:

Claims 1 through 10 have been cancelled.

Claims 11 through 20 have been added to claim additional features of the invention.

The following listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1-10. Cancelled.

11 (new). A short circuit detector for a fieldbus network, said network comprising at least one of a digitally controlled sensor or actuator coupled to a negative lead, a positive lead and a shield conductor and comprising:

a) a digital control circuit for propagating a digital signal over said network;

b) at least one power supply circuit coupled to said network for supplying power to at least one of said digitally controlled sensor or actuator;

c) a first high impedance semiconductor circuit coupled between said positive lead and said shield conductor and having a first output;

d) a second high impedance semiconductor circuit coupled between said negative lead and said shield conductor and having a second output; and

e) an alarm circuit coupled to said first and second outputs for activating an alarm whenever a short circuit exists between either of said positive or negative leads and said shield conductor.

12 (new). The short circuit detector of claim 11 wherein said alarm circuit includes a ground connection that is isolated from shield conductor.

13 (new). The short circuit detector of claim 12 wherein the alarm circuit includes an opto-isolator device.

14 (new). In combination, a fieldbus network and a short circuit detector, said fieldbus network comprising a plurality of network components interconnected by a positive line, a negative line and a shield conductor, and including:

a) a digital control circuit for propagating a digital signal over said network to said network components;

b) at least one power supply circuit for supplying DC power to one or more of said network components; and

said short circuit detector comprising a first high impedance alarm circuit coupled between said positive line and said shield conductor and a second high impedance alarm circuit coupled between said negative line and said shield conductor.

15 (new). The short circuit detector of claim 14 wherein said first and second high impedance alarm circuits each comprise a constant current diode connected in series with an alarm indicator device.

16 (new). The short circuit detector of claim 15 wherein said alarm indicator device is a light emitting diode.

17 (new). The short circuit detector of claim 11 wherein each of the first and second high impedance semiconductor circuits have a visual indicator device for identifying whether a short circuit has occurred in either the positive or the negative line.

18 (new). The short circuit detector of claim 11 wherein each of the first and second high impedance semiconductor circuits include a zener diode for blocking current except in a short circuit condition.

19 (new). The short circuit detector of claim 18 wherein each of the first and second high impedance semiconductor circuits includes a semiconductor device coupled to an opto-isolator device.

20 (new). The short circuit detector of claim 19 wherein each opto-isolator device is coupled to an alarm circuit.